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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/894,379	06/29/2001	Richard Henry Dee	2001-019-TAP	5546

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EXAMINER	
CASTRO, ANGEL A	
ART UNIT	**PAPER NUMBER**
2627	

DATE MAILED: 06/02/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/894,379	DEE ET AL.	
	Examiner	Art Unit	
	Angel A. Castro	2627	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 March 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,4-11 and 14-38* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,4-11 and 14-38* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

This Office Action is in response to Amendment filed 3/7/06.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 4-6, 10-11, 14-16, 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Tobise et al (U.S. Pat. 5,748,416).

Regarding claims 1 and 11, Tobise et al discloses a reduced sensitivity spin valve sensor apparatus (figure 15), comprising:

a spin valve sensor; and

at least one magnetic effect inducing device 21,

wherein the at least one magnetic effect inducing device induces a magnetic field to the spin valve sensor to thereby reduce a sensitivity of a free layer of the spin valve sensor to applied magnetic fields and wherein the at least one magnetic effect inducing device is a pair of permanent magnet stiffening elements and wherein the spin valve sensor is positioned between at least two insulating films 41, 42 (column 13, line 67; column 14, lines 45-48 and 15-21).

Regarding claims 2 and 12, Tobise et al discloses that the at least one magnetic effect inducing device is at least one permanent magnet (column 14, lines 40-42 and 8-9).

Regarding claim 4-5, 14-15, Tobise et al shows that the at least one magnetic effect inducing device is a pair of permanent magnet stiffening elements 21 formed of cobalt-platinum/chromium magnets (see column 13, line 67, and figure 15).

Regarding claims 6 and 16, Tobise et al discloses that the at least one magnetic effect inducing device reduces the spin valve sensor's propensity to saturate (column 14, lines 21-27).

Regarding claims 10 and 20, Tobise et al discloses at least one magnetic shield 52, wherein the at least two insulating film are alumina (column 13, lines 61-63, column 14, lines 2-4).

3. Claims 1, 7-9, 11, 17-19, 21-28, 29-36 are rejected under 35 U.S.C. 102(b) as being anticipated by Fontana et al (U.S. Pat. 5,528,440).

Regarding claims 1 and 11, Fontana et al discloses a reduced sensitivity spin valve sensor apparatus (figure 5), comprising:

a spin valve sensor 60; and

at least one magnetic effect inducing device 91, 66,

wherein the at least one magnetic effect inducing device induces a magnetic field to the spin valve sensor to thereby reduce a sensitivity of a free layer of the spin valve sensor to applied magnetic fields (column 8, lines 16-20) and wherein the at least one magnetic effect inducing device is a pair of permanent magnet stiffening elements and wherein the spin valve sensor is positioned between at least two insulating films (see figure 6G, one above edge 100 and another below edge 101).

Regarding claims 7, 21, 17 and 29, Fontana et al discloses that the at least one magnetic effect inducing device is an antiferromagnet layer (column 6, lines 53-57).

Regarding claims 8-9 and 18-19, Fontana et al discloses that the antiferromagnet layer generate a longitudinal exchange induced bias field in the free layer that reduces the sensitivity of the free layer to applied magnetic fields (column 8, lines 16-20).

4. Claims 1, 7-9, 11, 17-19, 21-38 are rejected under 35 U.S.C. 102(b) as being anticipated by Miyauchi et al (U.S. Pat. 5,852,533).

Regarding claims 1 and 11, Miyauchi et al discloses a reduced sensitivity spin valve sensor apparatus (figures 3-4), comprising:

a spin valve sensor; and

at least one magnetic effect inducing device 126,

wherein the at least one magnetic effect inducing device induces a magnetic field to the spin valve sensor to thereby reduce a sensitivity of a free layer 121 of the spin valve sensor to applied magnetic fields and wherein the at least one magnetic effect inducing device is a pair of permanent magnet stiffening elements and wherein the spin valve sensor is positioned between at least two insulating films 402 (column 7, lines 58-64 and figure 6).

Regarding claims 7 and 17, Miyauchi discloses that the at least one magnetic effect inducing device is an antiferromagnet layer (column 7, lines 44-46).

Regarding claims 8-9 and 18-19, Miyauchi discloses that the antiferromagnet layer generate a longitudinal exchange induced bias field in the free layer that reduces the sensitivity of the free layer to applied magnetic fields (column 7, lines 58-66).

Regarding claims 21 and 29, Miyauchi discloses that the at least one magnetic effect inducing device includes a pair of antiferromagnetic layers 124, 126 (see figures 3 and 4).

Regarding claims 22-24 and 30-32, Miyauchi shows that the pair of antiferromagnetic layers includes an antiferromagnetic layer 126 that pins a ferromagnetic layer at zero degrees relative to a long axis of the free layer and an antiferromagnetic layer 124 that pins a ferromagnetic layer at ninety degrees relative to a long axis of the free layer 121 (see figure 4).

Regarding claims 25 and 33, Miyauchi discloses that the first and second antiferromagnetic layers have different blocking temperatures (column 8, lines 52-63).

Regarding claims 26 and 34, Miyauchi shows a ferromagnetic layer 123 spaced from the free layer 121 by a nonmagnetic layer 122 (see figure 3).

Regarding claims 27-28 and 35-36, since the thickness of the spacer layer of Miyauchi is the same as Applicant's, it is inherent that the thickness of the nonmagnetic layer is used to control the ferromagnetic exchange between the ferromagnetic layer and the free layer.

Regarding claims 37-38, Miyauchi et al discloses that the at least one magnetic effect inducing device 126 (figure 3) induces the magnetic field to the spin valve sensor thereby reducing the sensitivity of the entire free layer of the spin valve sensor to applied magnetic fields.

Response to Arguments

5. Applicant's arguments filed 3/7/06 have been fully considered but they are not persuasive.

Applicant asserts in page 8, last paragraph:

"*Tobise's* invention has an entirely different purpose, and to that end, uses permanent magnets with magnetic characteristics that are diametric opposite of the stiffening elements as claimed."

The Examiner points out that until now the magnetic characteristics of the stiffening elements has not been claimed in order to differentiate the claimed invention from the structures disclosed in the prior art.

Applicant asserts in page 11, last paragraph:

"In other words, *Fontana's* objective is not to induce the magnetic field to the entire free layer of the spin valve sensor but only to the ends of the free layer. As a result, this express teaching cannot be extrapolated to mean the entire spin valve sensor and not just the ends."

The Examiner respectfully points out that the structure of Fontana is the same as the structure of figure 8 of the instant application. The free layer having a pair of permanent magnets would have the magnetization of the ends fixed. It is not clear what is the meaning of the "entire spin valve" since the free layer is the only element that can reduce the sensitivity of the spin valve according to the claims. New added claims 37-38 refers to figure 9A different from figure 8 where the permanent magnets 860 and 870. If Applicant tries to combine different embodiments, it is requested that it points out where in the figures the features of claim 1 and 37 are shown.

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Angel A. Castro whose telephone number is 571-272-7584. The examiner can normally be reached on Monday through Thursday, 8 AM to 6 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoa T. Nguyen can be reached on 571-272-7579. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Angel Castro, Ph.D.